



February 18, 2021

Ms. Sharon Hartzell
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Mr. Brian Jankauskas
New York State Department of
Environmental Conservation
Division of Environmental Remediation
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Dear Ms. Hartzell and Mr. Jankauskas:

**SUBJECT: BROOKHAVEN NATIONAL LABORATORY (BNL) INTERAGENCY
AGREEMENT (IAG) – ANNUAL LAND USE AND INSTITUTIONAL
CONTROLS EVALUATION**

In accordance with Section 5.0 of the Brookhaven National Laboratory (BNL) *Land Use Controls Management Plan (LUCMP)*, an annual letter report is submitted to the regulatory agencies to provide an evaluation of the status of the land use and institutional controls (LUICs) and describe how any LUIC deficiencies or inconsistent uses have been addressed. This letter report also provides a certification that institutional and engineering controls remained in place and were unchanged during the previous year for the High Flux Beam Reactor (HFBR), the Brookhaven Graphite Research Reactor (BGRR), and the g-2 and Brookhaven Linac Isotope Producer (BLIP) source area caps.

Although semi-annual LUIC inspections are required for most areas, due to site access limitations resulting from COVID-19, only annual LUIC inspections were performed during calendar year 2020. There were no activities observed that could have impacted the protectiveness of the cleanup remedies. The institutional controls (ICs) that were evaluated included adherence with BNL procedures (such as Work Planning and Excavation Safety Subject Areas), as well as the review of fact sheets and maps that identify specific controls and restrictions by remediation area. Field inspections were performed to assess the effectiveness of the institutional controls (i.e., access restrictions) for each area.

A summary of the status of the controls, identification of any deficiencies or inconsistent uses, and how they were addressed this past year is discussed briefly below:

BNL Management System Institutional Controls Reviews: The BNL Facilities and Operations (F&O) Environmental, Security, Safety and Health procedure 500A Environmental Review and the BNL Excavation Safety Subject Area are two procedures that provide for a review of LUICs prior to any digging or major construction activities across the site. During the year, approximately 150 digging permits for various work activities were reviewed for IC requirements. Reviews of IC requirements were performed for the HFBR stack demolition project that needed to take into consideration impacts from groundwater treatment system Sr-90

non-potable water lines, monitoring wells and radiologically-contaminated soil. Other reviews included construction of the new transformer yard east of Building 725 (part of the Former Firehouse area), installation of a grounding loop at Building 725, paving and hydrant valve repair near the Current Firehouse needed to ensure that any excavated soil be returned to the same location due to potential soil contamination from historical Per- and Polyfluoroalkyl Substances (PFAS) use in those areas. Work planned at several areas including Geoprobes at the former hazardous waste management facility (FHWMF), valve repair and electrical work at Building 515, Building 650 demolition and paving west of Building 490 needed to coordinate with the Radiological Controls Division to ensure that management controls are in place for excavation and replacement of residual radiological landscape soil. The potential for finding unexploded ordnance at the former World War 1 rifle range was identified prior to the installation of soil borings for the Electron-Ion Collider.

LUIC Website Fact Sheets and Maps: LUIC fact sheets and maps are reviewed at least twice per year for accuracy and status as part of the LUIC inspections and are updated as necessary. Fact sheets were modified to update remediation history and current conditions and add links to referenced reports. Specific updates include:

- Updated the Current Conditions of Building 650 and the HFBR Grounds to reflect the initiation of demolition activities for the reclamation facility and the stack; the FHWMF waste loading area to reflect waste staging and rail loading for stack demolition; and the Old (Former) Firehouse to reflect the 2020 groundwater characterization, design and planned construction of a new groundwater treatment system for PFAS; and,
- During 2021, new fact sheets and maps will be prepared for the Former Firehouse (Proposed Sub-Area of Concern 33E) and Current Firehouse (Proposed Sub-Area of Concern 33F) to maintain institutional control over PFAS-contaminated groundwater and soil.

Field Inspections: Based on Section 5.0 of the LUCMP and the LUIC inspection details described in Section 2.1 of the BNL *Soil and Peconic River Surveillance and Maintenance Plan*, field inspections of the various remediation areas are conducted either annually or semi-annually. As noted above, LUIC inspections were performed annually, in September 2020. There were no breaches of the ICs. However, conditions observed that required follow-up actions included:

- A soil gas monitoring well located immediately north of the Current Landfill was inadvertently hit and damaged by a payloaders in April during removal of fallen trees near the adjacent roadway. In June, a drilling contractor verified no damage occurred to the PVC riser pipe and then straightened and reset the outer protective casing;
- Part of the snow fence that demarcates the former Building 811 area from the scrapyard to the north was found down during the inspection, and was subsequently repaired. Broken point of contact signs at the Building 811 area the Ash Pit were repaired and rehung;
- A small pine tree growing on the north edge of the Interim Landfill was cut down and vegetation growing in the Former Landfill Area drainage channels were either sprayed or mechanically cut; and,
- In response to a large brush fire in April on the northeast corner of the BNL property, a local fire department cut the lock on the North Street/Z-Path gate to access the fire. A new lock was subsequently installed by Brookhaven Science Associates (BSA).

Overall, the current land use for the areas inspected remains protective and consistent with the remedial action objectives identified in the Records of Decision (RODs).

Access Agreements: A key IC for the groundwater treatment systems located off the BNL property is to ensure that the property access agreements are in place and have not been violated. To date, the requirements of the existing access agreements have been met, including communicating the LUICs

and restrictions to the property owners and the use of the properties has conformed to these controls. The land parcel immediately east of the Industrial Park Treatment System changed property ownership in 2020. The new property owner requested that BSA abandon three monitoring wells that impact development of their property. These wells were formerly utilized for the Industrial Park East VOC plume and remediation system which has been decommissioned. Two of the wells were currently used for regional water level measurements however, removal of these wells from the network will not impact that work. The abandonment work will be performed in February 2021. A new access agreement is being developed between DOE and the property owner.

Discussions continued with BSA Legal and PSEG of Long Island to renew the LIPA property access agreement that expired in March 2018. BSA Legal has been working to modify the Town of Brookhaven license agreement to include the Industrial Park treatment system. A modification to an agreement for a property located on North Street was executed in January 2021 for an additional 10 years. These agreements will allow for BSA's continued access to operate and maintain groundwater treatment system related infrastructure.

Reactor Projects:

High Flux Beam Reactor (HFBR): Routine S&M of the HFBR confinement building was performed during 2020 in accordance with the *HFBR S&M Manual* (Revised August 2018). Due to COVID-19, the spring 2020 quarterly inspection of the confinement building was not performed. The remaining three quarterly inspections were performed as per the S&M Manual requirements. The inside of the building was dry during the inspections and the leak detection system was tested and found to be working properly. Maintenance and repairs to the HFBR were performed throughout the year including removal of asbestos containing material on the floor, repair of the overhead piping insulation, reseal the openings on the air intakes on the exterior walls adjacent to the generator room and repair to cracked masonry on the east side exterior of the confinement dome.

The annual structural/roof inspection of the HFBR was completed in October 2020. Overall, the interior and exterior of the HFBR remain in good condition and there were no significant issues identified. In August 2020, radiation measurements of the V-14 port on top of the HFBR reactor vessel were conducted to confirm that radioactive decay is occurring at the modeled rate. This information will be summarized in the 2021 Five Year Review.

The *HFBR Stack and Grounds S&M Manual* (Revised September 2018) calls for semi-annual inspections of the stack silencer and grounds. Due to COVID-19 issues and the planned stack demolition, inspections of the stack silencer and grounds as well as a structural inspection of the stack were not performed. The stack drain tank was pumped-out and the water level was maintained below 250 gallons and checked weekly. Control and management of the stack drain tank, including pump-out, was formally transferred from BSA to the stack demolition contractor on August 27, 2020.

The following significant activities have been performed for the stack demolition project in 2020:

- Responses to State comments on the Updated Remedial Design/Remedial Action (RD/RA) Work Plan were submitted to the regulators in January 2020. Due to the nature of the comments, the October 2019 RD/RA Work Plan remained unchanged.
- The U.S. Army Corps of Engineers (USACE) awarded the stack demolition contract in February 2020.
- Following regulator review and comment on the draft Quality Assurance Project Plan and Field Sampling Plan, the Demolition Plan and Community Air Monitoring Plan for the stack demolition, the final plans were submitted to the regulators August 24, 2020.
- DOE briefed the regulators on the status of the demolition project during the April through December 2020 IAG teleconferences.

- DOE and USACE presented the status of the demolition project to the Community Advisory Council in May, September, and October 2020. The Brookhaven Executive Roundtable was briefed in March and September 2020. BSA employees were also briefed on the planned work in July 2020.
- The demolition contractor mobilized to the site in August 2020 to begin the exterior coating abatement. The abatement was completed in early November.
- DOE submitted a milestone extension request to EPA August 21, 2020 to extend the ROD completion date of the stack demolition by three months due to contractor mobilization delays associated with COVID-19. EPA approved the request on October 6, 2020. As a result, physical removal of the HFBR stack was targeted for completion in December 2020 with administrative closeout by July 2021.
- Mobilization of the demolition equipment to the site was initiated in late-November, followed by initiation of stack demolition on December 9, 2020. Approximately 290 feet of stack was demolished by January 27, 2021.
- The 30 feet of remaining stack will be demolished in February 2021 using an excavator working from the ground surface.

Brookhaven Graphite Research Reactor (BGRR): Routine S&M of the BGRR was performed in 2020 in accordance with the *BGRR S&M Manual* (Revised August 2018). Due to COVID-19, the spring 2020 quarterly inspection of the high bay and former offices, as well as the spring 2020 semi-annual inspection of the engineered cap were not performed. Inspections of the below ground ducts will be changed to annual starting in 2021. Inspections since 2012 have shown little physical change, and only minor water accumulation has been observed which appears to be from condensation. The leak detection sensors placed in each duct can remotely monitor for water impacts. These factors in conjunction with the slippery and steep conditions for inspectors warrant an inspection frequency reduction. Maintenance and repairs were performed throughout the year including repair to an atrium window on the east air intake and the leak detection sensor in the south cooler of the below ground ducts failed and is being replaced in March 2021. Removal of vegetation and sealing of cracks in the engineered cap was also performed. Several sections of siding on the western-most doghouse had rotted and was replaced. Lighting was installed on the west stairwell and a new stairway was installed for a science research project that will include equipment on the BGRR roof.

The annual structural and roof inspection was performed in October 2020 and there were no significant issues identified.

g-2 and BLIP Source Area Caps: Visual inspections of the g-2 and BLIP source area caps were performed as required by the g-2 Tritium Source Area and Groundwater Plume, BLIP and Former Underground Storage Tanks ROD.

June 2020 and January 2021 inspections of the g-2 cap found it to be in satisfactory condition. The June inspection found the need for preventative maintenance cutting of weed growth at the cap's sheet piles. This work was completed prior to the January inspection. The ponding of water caused by a depression in the cap first noted in 2015 did not progress. This condition will continue to be monitored, and the need for repairs will be evaluated. Groundwater monitoring data indicate that the surface water controls continue to be effective.

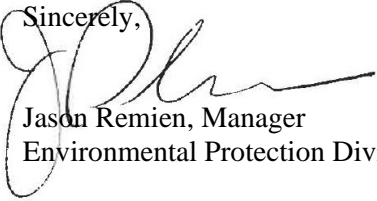
The BLIP cap was inspected in August, September, and December 2020. The cap was determined to be satisfactory in all inspection criteria during each inspection. No work was needed in 2020 to maintain this cap. The adjoining LINAC "Y" cap was also inspected in August, September, and December 2020. The cap was determined to be satisfactory in all inspection criteria during each inspection. No work was needed in 2020 to maintain this cap. Groundwater monitoring data indicate that the surface water controls continue to be effective.

In summary, the institutional and engineered controls for both source areas are in place, and nothing has occurred in 2020 that would impair the ability of the controls to protect public health and the

environment or constitute a violation or failure to comply with the *BNL Land Use Controls Management Plan*.

Documentation for all inspections associated with the LUICs, reactor S&M and g-2/BLIP cap activities are maintained in accordance with records retention policies and are available for review upon request.

If you have any questions or need any further information, please call me at (631) 344-3477 or Bill Dorsch at (631) 344-5186.

Sincerely,

Jason Remien, Manager
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